Latex

Describe The Document !

July 25, 2019

Latex is a Markup Language, like HTML

- First item
- Second.
- Third.

```
\begin{itemize}
  \item First item
  \item Second.
  \item Third.
\end{itemize}
```

but much more powerful ...

$$\begin{aligned}
\sqrt{37} &= \sqrt{\frac{73^2-1}{12^2}} && (1)\\
&= \sqrt{\frac{73^2}{12^2}\cdot\frac{73^2-1}{73^2}} && (2)\\
&= \sqrt{\frac{73^2}{12^2}}\sqrt{\frac{73^2-1}{73^2}} && (3)\\
&\approx \frac{73}{12}\left(1-\frac{1}{2\cdot 73^2}\right) && (4)
\end{aligned}$$

```
1
2 \begin{align}
3 \sqrt{37} & = \sqrt{\frac
      {73^2-1}{12^2}} \\
4  & = \sqrt{\frac
       {73^2}{12^2}\cdot\
       frac{73^2-1}{73^2}}
       \\
5  & = \sqrt{\frac
       {73^2}{12^2}}\sqrt{\
       frac{73^2-1}{73^2}}
       \\
6  & \approx \frac{73}{12}\
       left(1 - \frac{1}{2\
       cdot73^2}\right)
7 \end{align}
```

Made for Maths but its a multipurpose tool

$$x^2 + y^2 = z^2$$

$$\int \frac{x^5 - 4x^3 + 6x}{x}\, dx$$

$$\sum_{i=0}^{n} i^2 = \frac{(n^2 + n)(2n + 1)}{6}$$

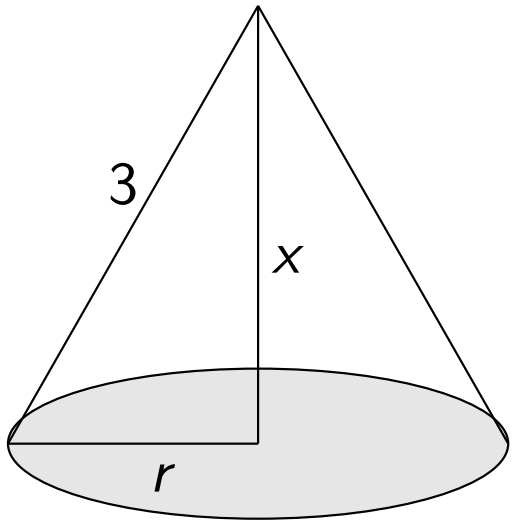
```
$$  x^2 + y^2 = z^2 $$
$$ \int \frac{x^5 - 4x^3
     + 6x}{x}\ dx$$
$$\sum_{i=0}^n i^2 = \
     frac{(n^2+n)(2n+1)
     }{6}$$
```

Seamless Graphics and Text mixture

Question : The slant height of a right circular cone is 3 cm. Find the height of cone, if its volume is the greatest.

Solution : Let r and x be the base-radius and the height of the cone respectively. Then volume of the cone f(x) is given by

$$
\begin{aligned}
f(x) &= \frac{1}{3}\pi r^2 x \\
&= \frac{\pi}{3}(3^2 - x^2)x \\
&= \frac{\pi}{3}(9x - x^3) \\
\therefore f'(x) &= \frac{\pi}{3}(9 - 3x^2)
\end{aligned}
$$



Chemical Formulae with Package 'chemfig'

`\chemfig{O=H}` will give 

Default angle units : 1 unit = 45°. Hence in the following example, the angles are 45° and 315°.

`\chemfig{H_3C-CH_2(-[2]CH_3)-C(=[1]O)-[7]O-CH_3}` gives